

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Bradley J. Aitchison, Arto Pakkala, Pekka Kuosmanen, and Kari Härkönen

Application No. 10/611,797

Filed: June 30, 2003

For: **CAPACITOR FABRICATION
METHODS AND CAPACITOR
STRUCTURES INCLUDING
NIOBIUM OXIDE**

Group Art Unit:

Examiner:

Date: November 17, 2003



Confirmation No. 5087

INFORMATION DISCLOSURE STATEMENT

TO THE COMMISSIONER FOR PATENTS:

1. Pursuant to the duty of disclosure, documents listed on the accompanying Form PTO-1449 (or equivalent) are presented for the Examiner's consideration.
 - ☒ Copies of listed documents are enclosed. (37 CFR § 1.98(a))
 - ☐ Copies of listed U.S. patent documents are omitted because this application was filed after June 30, 2003 and is, thus, subject to image file wrapper processing. Copies of listed foreign patent documents and non-patent literature are enclosed.
 - ☐ Copies of the documents listed on sheet(s) _____ of Form PTO-1449 (or equivalent) are omitted because (1) they are already of record in U.S. Patent Application No. _____, filed _____, on which this application relies for an earlier filing date under 35 U.S.C. § 120; and (2) any information disclosure statement filed in the prosecution of Application No. _____, complies with 37 CFR §§ 1.98(a) through (c). (37 C.F.R. § 1.98(d))
2. ☐ The Examiner's attention is directed to the enclosed copy of copending U.S. Patent Application No. _____, filed _____, for _____, which is cited in this application.
3. This information disclosure statement is being submitted (check box a., b., or c.):
 - a. ☒ Within three months of the filing date of a national application or entry of the national stage in an international application; or before the mailing of a first Office action on the merits; or before the mailing of a first Office action after the filing of a request for continued examination under 37 CFR 1.114. (No statement under 37 CFR 1.97(e) is required.); or

- b. ☐ After the period set forth in paragraph 3a, but before the mailing date of either a final action, a notice of allowance, or an action that otherwise closes prosecution in the application. (Check box i. or ii.)
- i. ☐ A \$180.00 information disclosure statement submission fee set forth in 37 CFR 1.17(p) is enclosed, or
- ii. ☐ A statement specified by 37 CFR 1.97(e) is set forth below; or
- c. ☐ After the mailing date of a final action or notice of allowance and on or before payment of the issue fee. A statement specified by 37 CFR 1.97(e) is set forth below. Enclosed is a \$180.00 information disclosure statement processing fee set forth in 37 CFR 1.17(p).
4. If a statement specified by 37 CFR 1.97(e) is required, the attorney or agent signing below hereby states that:
- ☐ each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or
- ☐ no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement.
5. ☐ A concise explanation of the relevance of each document not in the English language and/or selected documents in the English language is set forth below.

Respectfully submitted,

Planar Systems, Inc.

By 
Kassim M. Ferris
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PTO/SB/08a (05-03)

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1

of 2

Complete if Known

Application Number	10/611,797
Filing Date	June 30, 2003
First Named Inventor	Bradley J. Aitchison
Art Unit	
Examiner Name	
Attorney Docket Number	11429/17:2

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 5,714,274	02/03/1998	Sugiura et al.	
	2	US- 6,207,301 B1	03/27/2001	Ohnishi et al.	
	3	US- 6,420,230 B1	07/16/2002	Derderian et al.	
	4	US- 2001/0052609 A1	12/20/2001	Agarwal et al.	
	5	US- 2002/0024080 A1	02/28/2002	Derderian et al.	
	6	US- 2002/0025628 A1	02/28/2002	Derderian et al.	
	7	US- 2002/0036313 A1	03/28/2002	Yang et al.	
	8	US- 2003/0013263 A1	01/16/2003	Basceri et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶

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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**INFORMATION DISCLOSURE
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Sheet 2

of 2

Attorney Docket Number 11429/17:2

Complete if Known

Application Number	10/611,797
Filing Date	June 30, 2003
First Named Inventor	Brad Aitchison
Art Unit	
Examiner Name	
Attorney Docket Number	11429/17:2

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	9	PAUL A. TIPLER, Physics, 1976, pages 660-663, Volume 2, Worth Publishers, New York.	
	10	KAUPO KUKLI, "Properties of Atomic Layer Deposited (Ta _{1-x} Nb _x)xO ₅ Solid Solution Films and Ta ₂ O ₅ -Nb ₂ O ₅ Nanolaminates," Journal of Applied Physics, November 15, 1999, pages 5656-5662, Volume 86, Number 10, American Institute of Physics.	
	11	KAUPO KUKLI et al., "Development of Dielectric Properties of Niobium Oxide, Tantalum Oxide, and Aluminum Oxide Based Nanolayered Materials," Journal of the Electrochemical Society, 2001, pages F35-F41, 148 (2).	
	12	STROMME et al., "(Ta _{1-x} Nb _x) ₂ O ₅ Films Produced by Atomic Layer Deposition: Temperature Dependent Dielectric Spectroscopy and Room-Temperature I-V Characteristics," Journal of Applied Physics, November 1, 2001, pages 4532-4542, Volume 90, Number 9, American Institute of Physics.	
	13	"High Throughput Atomic Layer Chemical Vapour Deposition Batch Equipment Using Remote Plasma Enhanced Processing and In-Situ Chamber Clean," Semiconductor Equipment Assessment Project Synopsis, 2 pages. http://www.sea.rl.ac.uk . November 2002. Semiconductor Equipment Assessment.	
	14	KAUPO KUKLI et al., "Atomic Layer Deposition of Al ₂ O ₃ , ZrO ₂ , Ta ₂ O ₅ , and Nb ₂ O ₅ Based Nanolayered Dielectrics," Journal of Non-Crystalline Solids, 2002, pages 35-39, 303, Elsevier Science Ltd.	
	15	KAUPO KUKLI et al., "Niobium Oxide Thin Films Grown by Atomic Layer Epitaxy," Chemical Vapor Deposition 1998, 4, No. 1, pages 29-33.	
	16	KAUPO KUKLI et al., "Properties of (Nb _{1-x} Ta _x) ₂ O ₅ Solid Solutions and (Nb _{1-x} Ta _x) ₂ O ₅ -ZrO ₂ Nanolaminates Grown by Atomic Layer Epitaxy, NanoStructured Materials, 1997, Vol. 8, No. 7, pages 785-793.	
	17	KAUPO KUKLI et al., "Dielectric Oxide Nanolaminates Deposited by Atomic Layer Epitaxy," Electrochemical Society Proceedings, 1998, Volume 97-25, pages 1137-1144.	

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1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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